

AMENDMENT TO THE CLAIMS:

Please amend the claims as follows, substituting any amended claim(s) for the previously pending claim(s):

Claims 1–20 (Canceled).

1 21. (Currently Amended) A voltage controlled oscillator (VCO) receiving positive and
2 negative control voltages on which an oscillation frequency of a signal is based, the VCO
3 comprising:

4 a storage capacitor linearly charged by a constant charge current and linearly
5 discharged by a constant discharge current;

6 a comparator comparing a voltage on the storage capacitor to upper and lower
7 threshold voltages, wherein an output of the comparator drops to a negative saturation voltage when
8 the storage capacitor voltage exceeds one of the upper and lower threshold voltages and rises to a
9 positive saturation voltage when the storage capacitor voltage exceeds the other of the upper and
10 lower threshold voltages;

11 a constant charge current source injecting constant charge current to the storage
12 capacitor when the comparator output rises to one of the positive and negative saturation voltages;
13 and

14 a constant discharge current source draining constant discharge current from the
15 storage capacitor when the comparator output drops to the other of the positive and negative
16 saturation voltages.

1 22. (Previously Presented) The VCO as set forth in Claim 21, wherein the comparator
2 output is coupled to the VCO output.

1 23. (Previously Presented) The VCO as set forth in Claim 22, wherein the constant
2 charge current is determined by the positive control voltage.

1 24. (Previously Presented) The VCO as set forth in Claim 23 wherein the constant
2 discharge current is determined by the negative control voltage.

1 25. (Previously Presented) The VCO as set forth in Claim 23, wherein the constant
2 charge current source comprises a bipolar junction transistor having a base coupled to the positive
3 control voltage, an emitter coupled to the comparator output via a load resistor, and a collector
4 coupled to the storage capacitor.

1 26. (Previously Presented) The VCO as set forth in Claim 23, wherein the constant
2 discharge current source comprises a bipolar junction transistor having a base coupled to the negative
3 control voltage, an emitter coupled to the comparator output via a load resistor, and a collector
4 coupled to the storage capacitor.

1 27. (Previously Presented) The VCO as set forth in Claim 22, wherein the constant
2 charge current is determined by the negative control voltage.

1 28. (Previously Presented) The VCO as set forth in Claim 27, wherein the constant
2 discharge current is determined by the positive control voltage.

1 29. (Previously Presented) The VCO as set forth in Claim 27, wherein the constant
2 charge current source comprises a bipolar junction transistor having a base coupled to the negative
3 control voltage, an emitter coupled to the comparator output via a load resistor, and a collector
4 coupled to the storage capacitor.

1 30. (Previously Presented) The VCO as set forth in Claim 27, wherein the constant
2 discharge current source comprises a bipolar junction transistor having a base coupled to the positive
3 control voltage, an emitter coupled to the comparator output via a load resistor, and a collector
4 coupled to the storage capacitor.

1 31. (Previously Presented) The VCO as set forth in Claim 21, wherein the comparator
2 comprises:

3 an operational amplifier having a first input coupled to said storage capacitor;
4 a first resistor having a first terminal coupled to an output of the operational amplifier
5 and a second terminal coupled to a second input of the operational amplifier; and
6 a second resistor having a first terminal coupled to ground and a second terminal
7 coupled to the second input of the operational amplifier,
8 wherein the operational amplifier output is the comparator output.

1 32. (Previously Presented) The VCO as set forth in Claim 21, wherein the constant
2 charge current is determined by a difference between the positive saturation voltage and the positive
3 control voltage and the constant discharge current is determined by a difference between the negative
4 saturation voltage and the negative control voltage.

1 33. (Previously Presented) A processing system including the VCO according to claim
2 21, the processing system comprising:

3 a clocked circuit operating at a frequency defined by an external clock signal; and
4 a phase-locked loop coupled to the clocked circuit and supplying the external clock
5 signal, the phase-locked loop comprising:

6 a frequency divider dividing a frequency of the external clock signal by N;
7 a phase detector detecting a phase difference between a frequency divided
8 output of the frequency divider and an input reference signal and generating a phase
9 difference signal based upon the detected phase difference;

10 a charge pump and loop filter circuit converting the phase difference signal
11 to the positive and negative control voltages; and

12 the VCO.